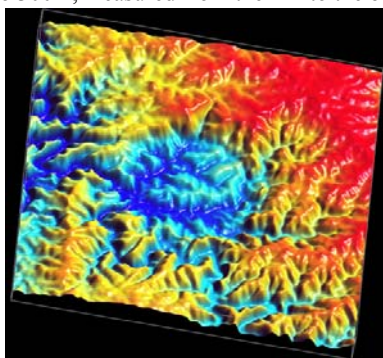


VISTA ALEGRE: A NEWLY DISCOVERED IMPACT CRATER IN SOUTHERN BRAZIL

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Introduction: Vista Alegre impact crater is a 9.5 km circular structure centered at 52° 41'S and 25° 57'W, in Paraná State, southern Brazil. It was formed on Cretaceous basalts of the Serra Geral Formation and it was recently discovered by the authors, being first reported at this meeting.

Geological Setting and Impact Features: The Vista Alegre crater has a very similar geological setting to that of Vargeão crater [1], located only 100 km to SE. Both craters were formed on basaltic rocks of Serra Geral Fm., both have similar overall characteristics and diameters and Triassic/Jurassic sandstones exposed at the central uplifted portion of the crater. Vista Alegre is clearly visible in Landsat/ETM+ and SRTM DEM images, as an almost-perfect circular depression with steep borders and topographic gradients up to 300m, measured from the rim to the bottom of the depression.



The image shows a SRTM DEM image, depicting Vista Alegre impact crater, in a 3-D perspective viewed from the south. Except for the SW portion, where the Chopim River cut through, the outer rim is well preserved. The central uplift appears as a subtle topographic feature, represented by gentle hills.

Polymict impact breccias occur at the central portion of the crater. They consist of weathered and highly deformed angular fragments of basalts, dolerites, gabbros, sandstones and fragmented minerals, immersed in a medium to fine-grained matrix. Some glassy fluidal forms, including portions of the matrix, seem to be the product of impact-related fusion. PDFs were found in isolated quartz grains within the breccias, together with cm-size shatter cones formed in fine grained material. Boulders of sandstone with conspicuous cataclastic deformation were found near the center, showing characteristics of Jurassic/Triassic sandstones of the Botucatu/Pirambóia formations, which usually sit at depths of 1,000 m below the basalts of the Serra Geral Fm.

Conclusions: Although the results are still preliminary, Vista Alegre fills several morphological, structural, deformational and petrologic criteria for a complex impact crater. Ongoing studies will further investigate the characteristics of this crater. A possible double impact origin for Vista Alegre and Vargeão shall be taken into account, considering the proximity and stratigraphic similarities of these two craters. Vista Alegre therefore represents the 5th proved impact crater in Brazil, together with Araguinha, Serra da Cangalha, Riachão and Vargeão [2].

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References: [1] Kazzuo-Vieira et al. (2004), 67th Ann. Meet. Meteorit. Soc (this CD-ROM). [2] Crósta A. P. (1987) In: Pohl J. *Research in Terrestrial Impact Structures*, p. 30–38. [3] Romano & Crósta (2004), 35th Lunar & Planetary Conference.